

## SPECIFICATION

**To All Whom It May Concern:**

5 Be It Known That I, Sven Åke Sjöstam, a citizen of Sweden, resident of the City of Aneby, whose post office address is Lommarydsvägen 22, S-578 00 Aneby, Sweden, have invented new and useful improvements in

## PLAY AND TRAINING EQUIPMENT

10

$$\begin{aligned} & \left( \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{1}{2}t^2} dt \right)^2 = 1 \\ & \left( \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{1}{2}t^2} dt \right)^2 = 1 \end{aligned}$$

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to Swedish application Ser. No. 0102538-6 filed July 12, 2001 and German application Ser. No. 40106489.1, filed July 12, 2001, both of which are incorporated herein by reference.

## STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

## BACKGROUND OF THE INVENTION

The present invention refers to play and training equipment. The equipment is mainly intended to be used at playgrounds and the like places but may also find use at many other locations.

## BRIEF SUMMARY OF THE INVENTION

Equipment according to the invention comprises at least one post or preferably two or more posts which are erected in vertical direction. Between the posts or a post and the ground or other support there are one or more movable elements or units, the movements of which are dampened or suppressed and of limited extension. The moving elements have various functions giving a maximum of stimulation to find new ways of climbing, balancing and coordinating in a rhythmic way in three dimensional directions. The inertia of the movements give a special feeling of speed and rapid movements. The movements are affected by the lever arm function that the user may achieve by coordinated movements of the body.

The play and training equipment according to the invention and embodiments thereof includes one or more units such as bridge, ladder or the like mounted in such a way that they can move with a limited and dampened swinging movement around an imaginary axis between the mounting shaft ends at each end of the unit.

The units each comprise a frame forming a closed loop and a number of members inside the frame. The frame preferably has an elliptic

shape and the members are parallel to the short axis of the ellipse. The outer frame, in one embodiment, forms a bow. In one embodiment of the members inside the frame are bowed or curved towards either side of the frame.

5 The connector which mounts the play units to the posts include an outer shell and a bushing within the shell. The connector enables the play unit to move with a limited and dampened swinging movement around an imaginary axis between the mounting shaft ends at each end of the unit. The bushing surrounds a mounting shaft of the play unit. Preferably, the  
10 bushing comprises discrete bushing elements spaced about said shell. The connector can include an inner tube which is received within the bushing. The inner tube, in turn, receives the mounting shaft of the play unit.

The invention will below be described more in detail with reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Figure 1 is a perspective view of play and training equipment according to the invention.

Figure 2 is a top plan view of the equipment of Figure 1.

Figure 3 is side elevational view of the equipment of Figure 1 in the direction of the arrow in Figure 2.

Figures 4-8 show various parts of the equipment of Figure 1.

Figure 9 is a cross section of a mounting bushing for use with the equipment.

25 Corresponding reference numerals will be used throughout the several figures of the drawings.

#### DETAILED DESCRIPTION OF THE INVENTION

30 The play and training equipment of figure 1 includes three posts 1-3 which extend vertically from the ground so that the feet of the posts mark the corners of an approximately like-sided triangle. In the embodiment shown in the figures the play and training equipment also includes four

parts which, in this case best, are described as ladders or bridges, two of which extend between one post and the ground, the other two of which extend between two of the posts.

Each unit such as a bridge, a ladder or the like is mounted in such a way that it can move with a limited and dampened swinging movement around an imaginary axis between the mounting shaft ends at each end of the unit. This is achieved by use of mounting bushings as shown in Figure 9. This mounting means provides a rocking motion to the connected unit which is progressively dampened and limited preferably to 15-30 degrees angle at each side from the starting position not allowing all around rotation.

The mounting device or bushing comprises an outer shell 24 which is fixedly mounted to the post, either on its outside or inside the post which then includes some kind of access opening. The outer shell has a square cross section and at each corner of the outer shell, inside the shell there is a rubber bushing 20-23. The rubber bushings are pressed against the outer shell by an inner tube 25 of square cross section, the side surfaces of which are positioned at a 45 degree angle to the side surfaces of the outer shell 24. When the device is mounted, a shaft end 26 of a unit is inserted into the inner tube 25. In other embodiments of the invention the inner tube 25 may be omitted and the shaft end inserted in direct contact with the rubber bushing. This way of mounting the units gives the suppressed, dampened and limited to and fro rocking motion that is desired.

The units, being used as bridges, ladders or otherwise, in their simplest form each comprises a frame forming a closed loop and a number of members inside the frame. The frame preferably has an elliptic shape and the members are parallel to the short axis of the ellipse. In more advanced designs the outer frame also forms a bow while the inside members are straight. In other designs the inside members are bow-shaped either to the convex or the concave side of the frame. Several of

these embodiments are shown in the drawings where the frames 10, 12, 14 of the units 4, 6 and 7, respectively, all are bow shaped. In the unit 6, the members 13 within the frame 12 of the unit are straight, while in the units 4 and 7, the members 11, 15 are bowed. The members 11 and 15 may be curved either towards the concave side of the frame as shown in Figures 5 and 6 at the unit 7 between the first post 1 and the second post 2, or towards the convex side of the frame as shown in Figures 7 and 8 at the unit 4.

It appears from the Figures that the units may be mounted in different ways. The units 4 and 5 are mounted between one post and the ground. They still have the same possibilities of moving as described above and may be used for climbing or other exercises. The two bridging units 6 and 7 are mounted between a pair of posts, 1 and 3 and 1 and 2 respectively. The mounting points or bushings are at the same height at both ends of one unit but the two units are mounted at different heights. The height over the ground is selected to be proper for the intended use of the equipment and for example the unit which is highest may be at such a height that it can barely be touched by a person standing on the ground and reaching up as far as possible.

Other kinds of play and training means may be added to the equipment with new effects. One example is shown in Figures 1-3 where a rope 8 with standing or sitting plate has been attached to the bridge 7.

In all of the embodiments described above the mounting of the ladders and bridges is the same at both ends, whether mounted to a post, the ground or any other kind of supporting base. It is, however, possible to have the dampening, resilient connecting means only at one end of a bridge or ladder while the other end may be of a different design, e. g. simply a hole or tube and a shaft end which fits into the hole or tube, all having a circular cross section. The units, whether positioned between two posts or one post and any other support, may be horizontal or inclined, i e

the bushings at the two ends of a unit may be mounted at the same or different heights.

Within the scope of the inventive idea there are also many other possibilities to combine the elements of the equipment in various ways. For example a unit may be mounted in a vertical position between a horizontal bar and a ground mounting point. The dampened, rocking movements of the unit will enable this application to be like a moving climbing wall, especially if two or more units are positioned adjacent one another. The dampening and other characteristics of the movements may also be changed and adapted to the intended use of the actual equipment. Furthermore the cross members of the units may be replaced by boards having suitable openings to allow the user to grip around the frame. There may also be grip openings in the board and the openings may be lined with any suitable material in which case a flexible, resilient lining is preferred. The frames have above been described as bowed and elliptic but other shapes are also possible. Examples are rectangular and diamond shapes, flat shapes and combinations of these shapes to form various symmetrical or asymmetrical shapes.

In addition to the units described above also other kind of exercise units may be mounted to the construction for use in connection therewith with new effects. One example is shown in Figures 1-3 where a rope 8 with a standing or sitting plate has been attached to the bridge 7. Another example is a kind of chute or gliding path which lends itself well to combination with the above described units as the chute requires or trains similar skills. The chute has the same cross section all along its length and is slightly curved. Its upper surface is shaped like a saddle and so wide that the user cannot form a closed circle with his or her legs under the saddle, thus avoiding a possible risk for damages. The user then must keep the balance without holding on to any kind of support.

**CLAIMS:**

Sub  
A1  
5 1. Play and training equipment comprising at least one play unit, at least one post to which the at least one play unit is mounted, and a connector for mounting the at least one play unit to the post; the at least one play unit including a mounting shaft at at least one end of the play unit; the connector enabling the play unit to move with a limited and dampened swinging movement around an imaginary axis between the mounting shaft ends at each end of the unit.

10 2. The play and training equipment according to claim 1 wherein the units each comprise a frame forming a closed loop and a number of members inside the frame.

3. The play and training equipment according to claim 2 wherein the frame preferably has an elliptic shape and the members are parallel to the short axis of the ellipse.

Sub  
A2  
15 4. The play and training equipment according to claim 3 wherein the outer frame forms a bow.

5. The play and training equipment according to claim 1 wherein the members are bowed or curved towards either side of the frame.

20 6. The play and training equipment according to claim 1 wherein the connector includes an outer shell and a bushing within the shell; the bushing surrounding a mounting shaft of the play unit.

7. The play and training equipment according to claim 6 wherein the connector includes an inner tube; the inner tube being received within the bushing; the inner tube receiving the mounting shaft of the play unit.

25 8. The play and training equipment according to claim 6 wherein the bushing comprises discrete bushing elements spaced about said shell.

9. Play and training equipment comprising:  
at least one play unit, the play unit including a mounting shaft at at least one end of the play unit;  
30 at least one post to which the at least one play unit is mounted; and

a connector for mounting the at least one play unit to the post; the connector including an outer shell and a bushing within the shell; the bushing surrounding the mounting shaft of the play unit; the connector enabling the play unit to move with a limited and dampened swinging movement around an imaginary axis between the mounting shaft ends at each end of the unit.

10. The play and training equipment according to claim 9 wherein the connector includes an inner tube; the inner tube being received within the bushing; the inner tube receiving the mounting shaft of the play unit.

11. The play and training equipment according to claim 9 wherein the bushing comprises discrete bushing elements spaced about said shell.

12. The play and training equipment of claim 9 wherein the connector is mounted within the post.

13. The play and training equipment of claim 9 wherein the connector is mounted to an outer surface of the post.